

FIG. 6B

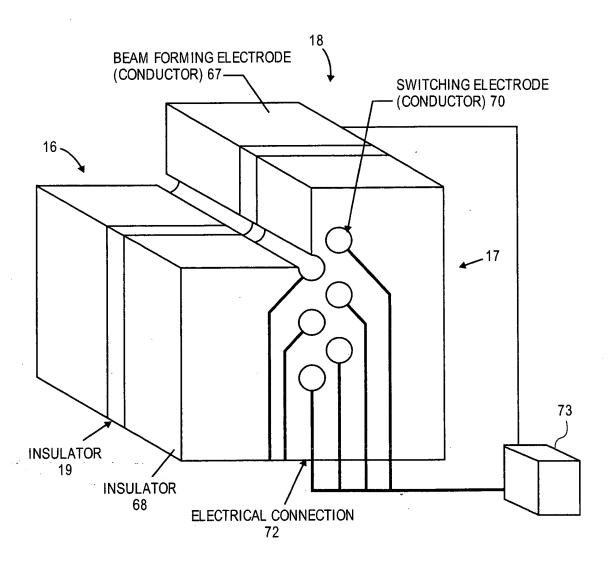


FIG. 6C

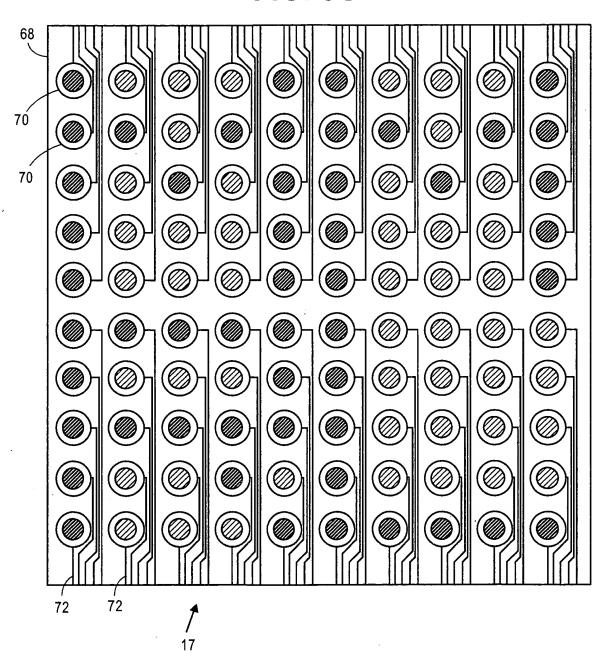


FIG. 6D

FIG. 6E

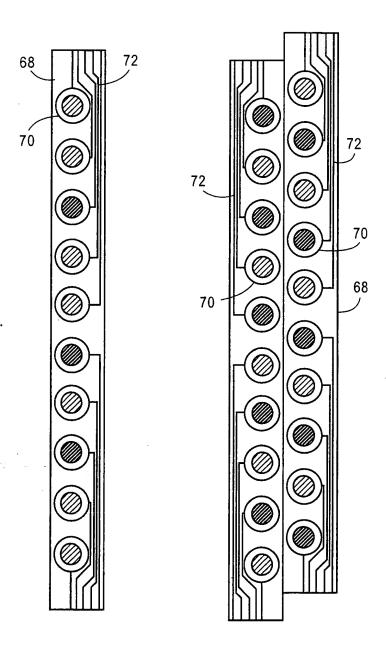


FIG. 7

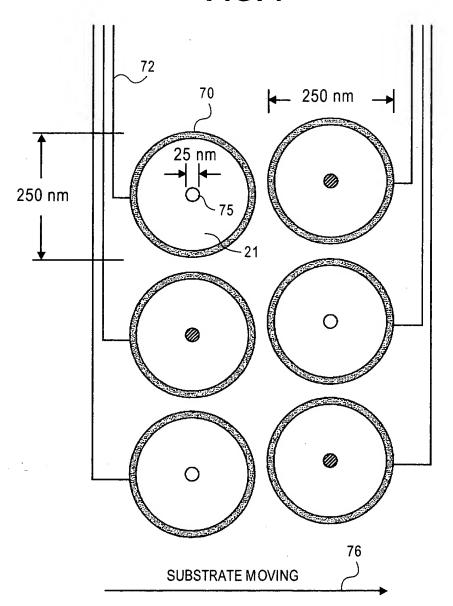
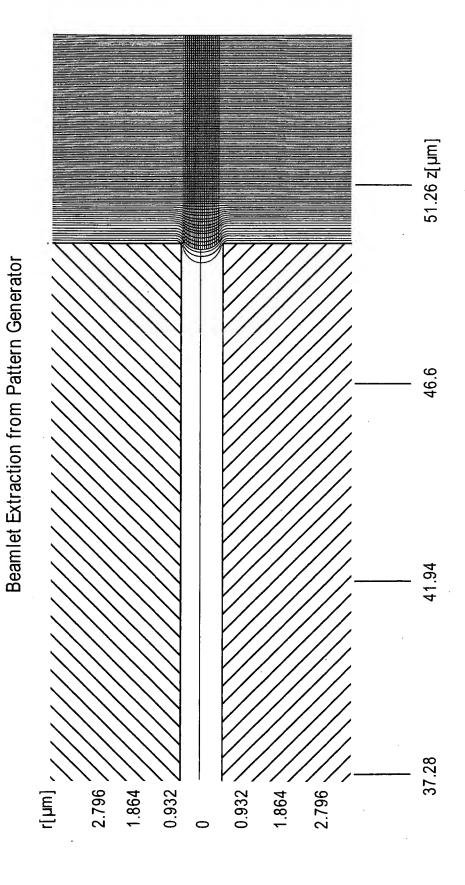


FIG. 9



**FIG. 10**Beam Extraction E=300 kV/cm, Ø=1 µm

FIG. 11
Beam Extraction E=27.5 kV/cm, Ø=1 µm

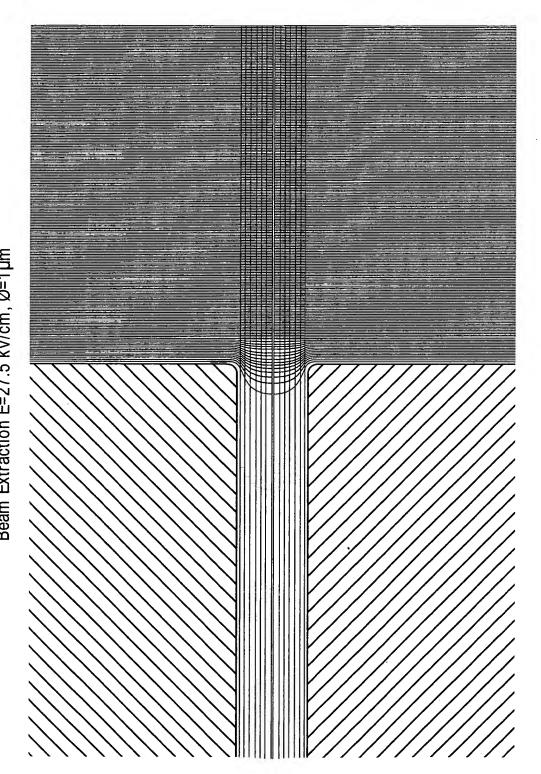


FIG. 12

Beam Extraction Comparison at E=300 kV/cm

Plasma Potential  $(U_p) = 46V$ 

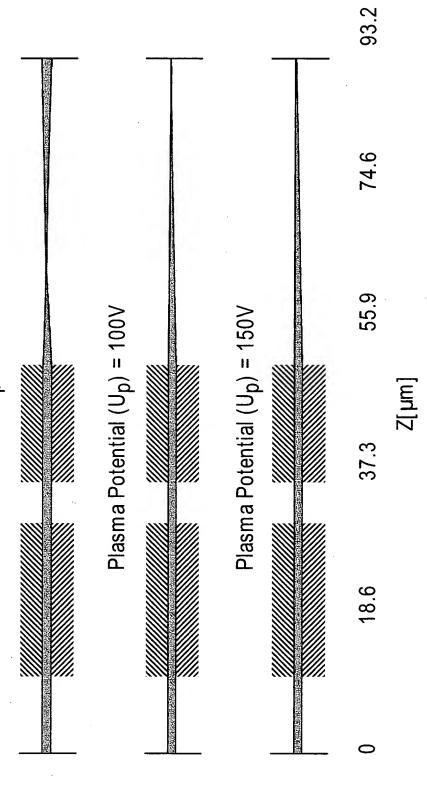
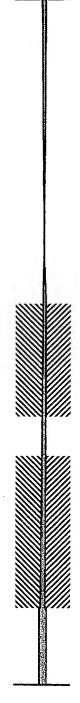


FIG. 13

Beam Extraction Comparison at E=300 kV/cm

Aperture diameter = 0.5 µm



Aperture diameter = 1 µm

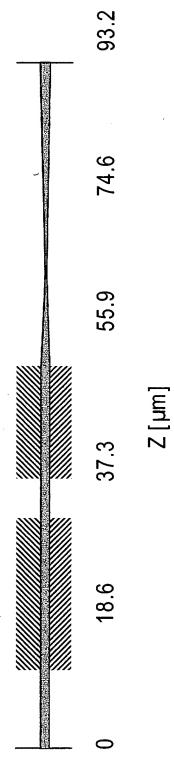


FIG. 14

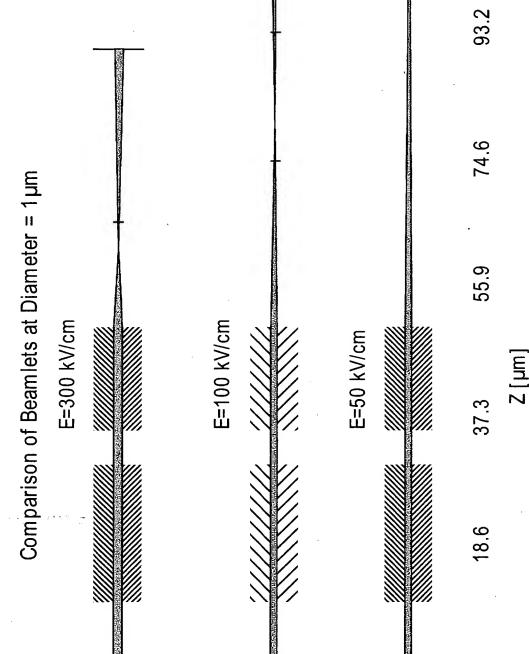
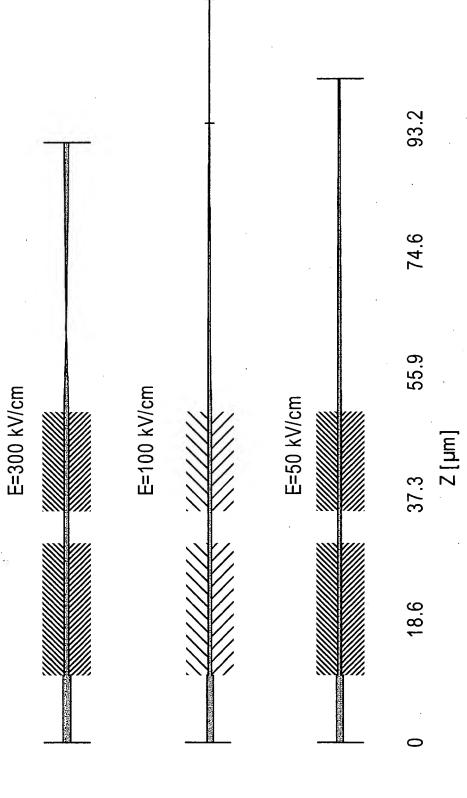


FIG. 15

Comparison of Beamlets at Diameter = 0.5µm



ANGLE\* 10\* \* -2

xtract35

Density = 100xE = 300 kV/cm

Mass = 40

Diameter = 1 µm

MESH UNIT=3.50E-6 cm

RMS-EMITTANCE=2.6E-4 cm\*mRod

RMS-BRILLIANCE=2.2E-6 A/(cm\*mRod)\*\*2

FOCUS-ELLIPSE AT Z=4.2E-3 cm from origin 15

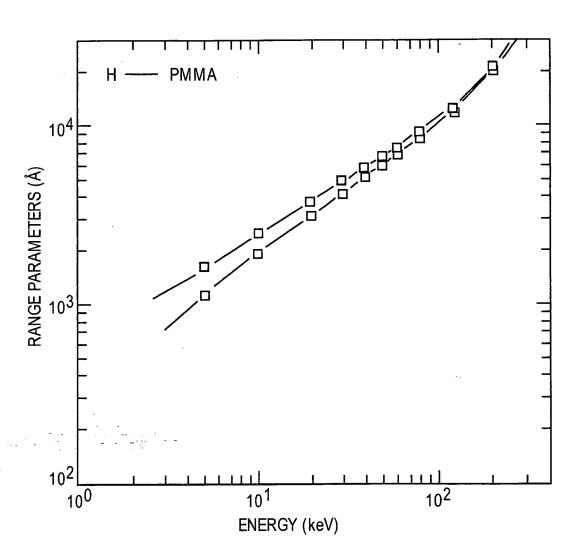
-15

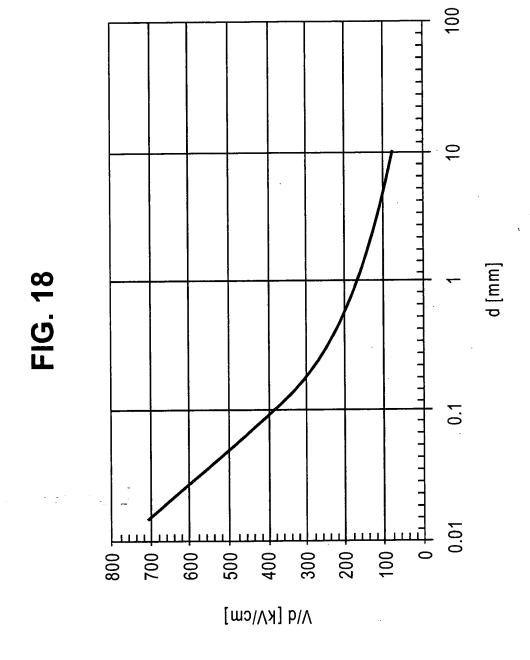
Rf=2.29E-5 cm, Af=14.42 mRod

RADIUS/UNIT

8.49E-13 A, 1.00E-4 A/cm\*\*2, 1.28E9/cm\*\*3, DEBYE=13298.506 UNITS, HOLD OF DENS UP=55.2, TE=5.0 eV, Ut=5.0 eV, MASS=40.0, Ti=1.0eV, USPUT=15.0 V

FIG. 17





✓ Out-going S.E. Electron Energy Secondary Electrons S.E.E.D. Time (ion dose) Coming-back S.E. Negative Ion (Non-Charge Balanced) (a few V) ਹੂ ਹੁ Secondary Electrons Emax Electron Energy Neutral Particle (several tens V) Time (particle dose) S.E.E.D. Čharge Balanced) (Non-٧ Emax Secondary Electrons Φ Positive lon Time (ion dose) (Non-Charge Balanced) Voltage (several tens kV) Ion Acceleration Electrode -Insulator-**Grounded** Electrode Charging Voltage of Insulated Electrode V

FIG. 19

